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Apparatus & Method for Wall Thickness & Flaw Detection for Gas Pipelines

Abstract

A ultrasonic method for measuring wall thickness and detecting material flaws in natural-gas pipelines, risers, and similar structures. The method is inherently suitable for the task, because it relies on the use of the natural gas as the coupling fluid for transmitting the probing ultrasonic signals into and out of the pipe wall. Furthermore, the method facilitates the operation of the inspection from the inside of the pipe. An experimental apparatus used to demonstrate the technical feasibility of this approach and provide experimental and theoretical evidence that support the claims is described. Significantly, it is shown that by the use of a diplexer, the same transducer can be used to generate and detect the probing ultrasonic signals. The same configuration is used in commercial ultrasonic inspection of oil pipelines where oil is the coupling fluid; but until now this method could not be used in natural gas pipelines due to the low specific acoustic impedance of natural gas.

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References

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Status of Availability

This invention is available for licensing.

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